SVKM's
D. J. Sanghvi College of Engineering

Program: B.Tech in Chemical Engineering **Academic Year: 2022** **Duration: 3 hours**
Date: 14.01.2023
Time: 10:30 am to 01:30 pm
Subject: Biotechnology (Semester V) **Marks: 75**

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.
(1) This question paper contains one page.
(2) All Questions are Compulsory.
(3) All questions carry equal marks.
(4) Answer to each new question is to be started on a fresh page.
(5) Figures in the brackets on the right indicate full marks.
(6) Assume suitable data wherever required, but justify it.
Draw the neat labelled diagrams, wherever necessary.

Question No.		Max. Marks
Q1 (a)	What are macronutrients and micronutrients. OR Differentiate Procaryotes and Eucaryotes.	[05] [05]
Q1 (b)	Draw and explain the construction of a bioreactor.	[10]
Q2 (a)	Draw and explain flowsheet for production on an extracellular enzyme. **OR** Explain types of enzyme inhibition. (Reversible and Irreversible)	[10] [10]
Q2 (b)	Explain construction and working of 2 stage Air lift bioreactor.	[05]
Q3 (a)	Compare lock and key model to induced fit model. **OR** Give significance of various parameters in Michaelis-Menten equation.	[05] [05]
Q3 (b)	Explain the different applications of biotechnology in pharmaceutical industry.	[10]
Q4 (a)	Write notes on Protein synthesis. OR Explain cell metabolism.	[10] [10]
Q4 (b)	Explain methods used to recover soluble products in downstream processing.	[05]
Q5 (a)	**Explain any two.** i. Coenzymes and cofactors ii. Eadie-Hofster plot iii. Types of bioreactors iv. Cell Structure	 [05] [05] [05] [05]
Q5 (b)	Write notes on Industrial genetics.	[05]